

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PA 322-24 BTV	5684.00	2519.98	-2362.78	1620985.40	2308170.80	39.5127468	-107.9524336	Circle (Radius: 50.00)
- plan misses target center by 0.288usft at 6738.81usft MD (5690.94 TVD, 2489.12 N, -2333.84 E)								
PA 322-24 PBHL	8240.00	2519.98	-2362.78	1620985.40	2308170.80	39.5127468	-107.9524336	Point
- plan misses target center by 0.01usft at 9290.29usft MD (8240.00 TVD, 2519.98 N, -2362.78 E)								



TEP Rocky Mountain LLC

Garfield County, CO NAD83

PA 34-24 Pad

PA 322-24 - Slot PA 322-24 (A7)

OH

Plan: Plan #2 9Aug2018 mmsdi

Standard Planning Report

13 August, 2018



www.scientificdrilling.com



Database:	Grand Junction District	Local Co-ordinate Reference:	Well PA 322-24 - Slot PA 322-24 (A7)
Company:	TEP Rocky Mountain LLC	TVD Reference:	GL 5371' & RKB 24' @ 5395.00usft
Project:	Garfield County, CO NAD83	MD Reference:	GL 5371' & RKB 24' @ 5395.00usft
Site:	PA 34-24 Pad	North Reference:	True
Well:	PA 322-24	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 9Aug2018 mmsdi		

Project	Garfield County, CO NAD83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site		PA 34-24 Pad			
Site Position:		Northing:	1,618,371.20 usft	Latitude:	39.5057421
From:	Map	Easting:	2,310,465.70 usft	Longitude:	-107.9440532
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.54 °

Well	PA 322-24 - Slot PA 322-24 (A7)					
Well Position	+N/-S	31.54 usft	Northing:	1,618,402.77 usft	Latitude:	39.5058287
	+E/-W	-1.61 usft	Easting:	2,310,464.94 usft	Longitude:	-107.9440589
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	5,371.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	8/9/2018	9.37	65.77	51,590

Design	Plan #2 9Aug2018 mmsdi			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	316.84

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
135.00	0.00	0.00	135.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,055.13	36.81	316.84	993.14	208.28	-195.28	4.00	4.00	0.00	316.84	
5,391.51	36.81	316.84	4,465.19	2,103.43	-1,972.21	0.00	0.00	0.00	0.00	
6,731.76	10.00	316.84	5,684.00	2,488.23	-2,333.01	2.00	-2.00	0.00	180.00	
7,231.76	0.00	0.00	6,181.47	2,519.98	-2,362.78	2.00	-2.00	8.63	180.00	
9,290.29	0.00	0.00	8,240.00	2,519.98	-2,362.78	0.00	0.00	0.00	0.00	PA 322-24 PBHL

Database:	Grand Junction District	Local Co-ordinate Reference:	Well PA 322-24 - Slot PA 322-24 (A7)
Company:	TEP Rocky Mountain LLC	TVD Reference:	GL 5371' & RKB 24' @ 5395.00usft
Project:	Garfield County, CO NAD83	MD Reference:	GL 5371' & RKB 24' @ 5395.00usft
Site:	PA 34-24 Pad	North Reference:	True
Well:	PA 322-24	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 9Aug2018 mmsdi		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
135.00	0.00	0.00	135.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 4.00									
200.00	2.60	316.84	199.98	1.08	-1.01	1.47	4.00	4.00	0.00
300.00	6.60	316.84	299.64	6.92	-6.49	9.49	4.00	4.00	0.00
400.00	10.60	316.84	398.49	17.83	-16.72	24.44	4.00	4.00	0.00
500.00	14.60	316.84	496.06	33.74	-31.64	46.25	4.00	4.00	0.00
600.00	18.60	316.84	591.88	54.58	-51.17	74.82	4.00	4.00	0.00
700.00	22.60	316.84	685.46	80.24	-75.23	109.99	4.00	4.00	0.00
800.00	26.60	316.84	776.37	110.60	-103.70	151.61	4.00	4.00	0.00
900.00	30.60	316.84	864.15	145.51	-136.44	199.47	4.00	4.00	0.00
1,000.00	34.60	316.84	948.38	184.81	-173.28	253.34	4.00	4.00	0.00
1,055.13	36.81	316.84	993.14	208.28	-195.28	285.51	4.00	4.00	0.00
Start 4336.38 hold at 1055.13 MD									
1,100.00	36.81	316.84	1,029.07	227.89	-213.67	312.39	0.00	0.00	0.00
9 5/8" Casing @ 1100' MD									
1,200.00	36.81	316.84	1,109.14	271.59	-254.65	372.30	0.00	0.00	0.00
1,300.00	36.81	316.84	1,189.20	315.29	-295.63	432.21	0.00	0.00	0.00
1,400.00	36.81	316.84	1,269.27	359.00	-336.60	492.12	0.00	0.00	0.00
1,500.00	36.81	316.84	1,349.34	402.70	-377.58	552.03	0.00	0.00	0.00
1,600.00	36.81	316.84	1,429.41	446.40	-418.56	611.94	0.00	0.00	0.00
1,700.00	36.81	316.84	1,509.48	490.11	-459.53	671.85	0.00	0.00	0.00
1,800.00	36.81	316.84	1,589.54	533.81	-500.51	731.76	0.00	0.00	0.00
1,900.00	36.81	316.84	1,669.61	577.52	-541.49	791.67	0.00	0.00	0.00
2,000.00	36.81	316.84	1,749.68	621.22	-582.47	851.58	0.00	0.00	0.00
2,100.00	36.81	316.84	1,829.75	664.92	-623.44	911.48	0.00	0.00	0.00
2,200.00	36.81	316.84	1,909.82	708.63	-664.42	971.39	0.00	0.00	0.00
2,300.00	36.81	316.84	1,989.88	752.33	-705.40	1,031.30	0.00	0.00	0.00
2,400.00	36.81	316.84	2,069.95	796.03	-746.38	1,091.21	0.00	0.00	0.00
2,500.00	36.81	316.84	2,150.02	839.74	-787.35	1,151.12	0.00	0.00	0.00
2,600.00	36.81	316.84	2,230.09	883.44	-828.33	1,211.03	0.00	0.00	0.00
2,656.09	36.81	316.84	2,275.00	907.96	-851.32	1,244.64	0.00	0.00	0.00
GSAND									
2,700.00	36.81	316.84	2,310.15	927.14	-869.31	1,270.94	0.00	0.00	0.00
2,743.52	36.81	316.84	2,345.00	946.16	-887.14	1,297.01	0.00	0.00	0.00
GSAND Base									
2,800.00	36.81	316.84	2,390.22	970.85	-910.28	1,330.85	0.00	0.00	0.00
2,900.00	36.81	316.84	2,470.29	1,014.55	-951.26	1,390.76	0.00	0.00	0.00
3,000.00	36.81	316.84	2,550.36	1,058.25	-992.24	1,450.67	0.00	0.00	0.00
3,100.00	36.81	316.84	2,630.43	1,101.96	-1,033.22	1,510.58	0.00	0.00	0.00
3,200.00	36.81	316.84	2,710.49	1,145.66	-1,074.19	1,570.49	0.00	0.00	0.00
3,300.00	36.81	316.84	2,790.56	1,189.37	-1,115.17	1,630.40	0.00	0.00	0.00
3,400.00	36.81	316.84	2,870.63	1,233.07	-1,156.15	1,690.31	0.00	0.00	0.00
3,500.00	36.81	316.84	2,950.70	1,276.77	-1,197.13	1,750.22	0.00	0.00	0.00
3,600.00	36.81	316.84	3,030.77	1,320.48	-1,238.10	1,810.13	0.00	0.00	0.00
3,700.00	36.81	316.84	3,110.83	1,364.18	-1,279.08	1,870.03	0.00	0.00	0.00
3,800.00	36.81	316.84	3,190.90	1,407.88	-1,320.06	1,929.94	0.00	0.00	0.00
3,900.00	36.81	316.84	3,270.97	1,451.59	-1,361.03	1,989.85	0.00	0.00	0.00
4,000.00	36.81	316.84	3,351.04	1,495.29	-1,402.01	2,049.76	0.00	0.00	0.00
4,100.00	36.81	316.84	3,431.10	1,538.99	-1,442.99	2,109.67	0.00	0.00	0.00
4,200.00	36.81	316.84	3,511.17	1,582.70	-1,483.97	2,169.58	0.00	0.00	0.00
4,300.00	36.81	316.84	3,591.24	1,626.40	-1,524.94	2,229.49	0.00	0.00	0.00
4,400.00	36.81	316.84	3,671.31	1,670.10	-1,565.92	2,289.40	0.00	0.00	0.00

Database:	Grand Junction District	Local Co-ordinate Reference:	Well PA 322-24 - Slot PA 322-24 (A7)
Company:	TEP Rocky Mountain LLC	TVD Reference:	GL 5371' & RKB 24' @ 5395.00usft
Project:	Garfield County, CO NAD83	MD Reference:	GL 5371' & RKB 24' @ 5395.00usft
Site:	PA 34-24 Pad	North Reference:	True
Well:	PA 322-24	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 9Aug2018 mmsdi		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,500.00	36.81	316.84	3,751.38	1,713.81	-1,606.90	2,349.31	0.00	0.00	0.00
4,600.00	36.81	316.84	3,831.44	1,757.51	-1,647.87	2,409.22	0.00	0.00	0.00
4,621.93	36.81	316.84	3,849.00	1,767.09	-1,656.86	2,422.36	0.00	0.00	0.00
Lower Wasatch									
4,700.00	36.81	316.84	3,911.51	1,801.22	-1,688.85	2,469.13	0.00	0.00	0.00
4,800.00	36.81	316.84	3,991.58	1,844.92	-1,729.83	2,529.04	0.00	0.00	0.00
4,900.00	36.81	316.84	4,071.65	1,888.62	-1,770.81	2,588.95	0.00	0.00	0.00
5,000.00	36.81	316.84	4,151.72	1,932.33	-1,811.78	2,648.86	0.00	0.00	0.00
5,100.00	36.81	316.84	4,231.78	1,976.03	-1,852.76	2,708.77	0.00	0.00	0.00
5,200.00	36.81	316.84	4,311.85	2,019.73	-1,893.74	2,768.68	0.00	0.00	0.00
5,300.00	36.81	316.84	4,391.92	2,063.44	-1,934.72	2,828.59	0.00	0.00	0.00
5,391.51	36.81	316.84	4,465.19	2,103.43	-1,972.21	2,883.41	0.00	0.00	0.00
Start Drop -2.00									
5,400.00	36.64	316.84	4,471.99	2,107.13	-1,975.69	2,888.48	2.00	-2.00	0.00
5,489.94	34.84	316.84	4,545.00	2,145.45	-2,011.62	2,941.01	2.00	-2.00	0.00
OCRK - MVRD - WRFK/UMVRD									
5,500.00	34.64	316.84	4,553.26	2,149.63	-2,015.53	2,946.74	2.00	-2.00	0.00
5,600.00	32.64	316.84	4,636.52	2,190.04	-2,053.42	3,002.13	2.00	-2.00	0.00
5,700.00	30.64	316.84	4,721.65	2,228.30	-2,089.29	3,054.58	2.00	-2.00	0.00
5,800.00	28.64	316.84	4,808.57	2,264.37	-2,123.11	3,104.02	2.00	-2.00	0.00
5,900.00	26.64	316.84	4,897.16	2,298.20	-2,154.84	3,150.41	2.00	-2.00	0.00
6,000.00	24.64	316.84	4,987.31	2,329.76	-2,184.43	3,193.67	2.00	-2.00	0.00
6,100.00	22.64	316.84	5,078.92	2,359.01	-2,211.85	3,233.76	2.00	-2.00	0.00
6,200.00	20.64	316.84	5,171.87	2,385.90	-2,237.07	3,270.62	2.00	-2.00	0.00
6,300.00	18.64	316.84	5,266.05	2,410.41	-2,260.05	3,304.23	2.00	-2.00	0.00
6,400.00	16.64	316.84	5,361.34	2,432.51	-2,280.77	3,334.52	2.00	-2.00	0.00
6,500.00	14.64	316.84	5,457.64	2,452.17	-2,299.20	3,361.47	2.00	-2.00	0.00
6,600.00	12.64	316.84	5,554.81	2,469.37	-2,315.33	3,385.04	2.00	-2.00	0.00
6,700.00	10.64	316.84	5,652.75	2,484.08	-2,329.12	3,405.21	2.00	-2.00	0.00
6,731.76	10.00	316.84	5,684.00	2,488.23	-2,333.01	3,410.90	2.00	-2.00	0.00
Start DLS 2.00 TFO 180.00 - KMGAS									
6,738.81	9.86	316.84	5,690.94	2,489.12	-2,333.84	3,412.11	2.00	-2.00	0.00
PA 322-24 BTV									
6,800.00	8.64	316.84	5,751.34	2,496.29	-2,340.57	3,421.95	2.00	-2.00	0.00
6,900.00	6.64	316.84	5,850.45	2,505.98	-2,349.65	3,435.23	2.00	-2.00	0.00
7,000.00	4.64	316.84	5,949.96	2,513.14	-2,356.37	3,445.05	2.00	-2.00	0.00
7,100.00	2.64	316.84	6,049.75	2,517.77	-2,360.71	3,451.39	2.00	-2.00	0.00
7,200.00	0.64	316.84	6,149.71	2,519.85	-2,362.66	3,454.24	2.00	-2.00	0.00
7,231.76	0.00	0.00	6,181.47	2,519.98	-2,362.78	3,454.42	2.00	-2.00	135.88
Start 2058.53 hold at 7231.76 MD									
7,300.00	0.00	0.00	6,249.71	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00
7,400.00	0.00	0.00	6,349.71	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00
7,500.00	0.00	0.00	6,449.71	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00
7,600.00	0.00	0.00	6,549.71	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00
7,700.00	0.00	0.00	6,649.71	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00
7,800.00	0.00	0.00	6,749.71	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00
7,900.00	0.00	0.00	6,849.71	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00
8,000.00	0.00	0.00	6,949.71	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00
8,100.00	0.00	0.00	7,049.71	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00
8,200.00	0.00	0.00	7,149.71	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00
8,300.00	0.00	0.00	7,249.71	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00
8,400.00	0.00	0.00	7,349.71	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00
8,500.00	0.00	0.00	7,449.71	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00

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Company:	TEP Rocky Mountain LLC	TVD Reference:	GL 5371' & RKB 24' @ 5395.00usft
Project:	Garfield County, CO NAD83	MD Reference:	GL 5371' & RKB 24' @ 5395.00usft
Site:	PA 34-24 Pad	North Reference:	True
Well:	PA 322-24	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 9Aug2018 mmsdi		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,600.00	0.00	0.00	7,549.71	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00	
8,700.00	0.00	0.00	7,649.71	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00	
8,793.29	0.00	0.00	7,743.00	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00	
CMEO										
8,800.00	0.00	0.00	7,749.71	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00	
8,900.00	0.00	0.00	7,849.71	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00	
9,000.00	0.00	0.00	7,949.71	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00	
9,100.00	0.00	0.00	8,049.71	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00	
9,140.29	0.00	0.00	8,090.00	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00	
RLNS										
9,200.00	0.00	0.00	8,149.71	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00	
9,290.29	0.00	0.00	8,240.00	2,519.98	-2,362.78	3,454.42	0.00	0.00	0.00	
TD at 9290.29 - TD - PA 322-24 PBHL										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
PA 322-24 BTV	0.00	0.00	5,684.00	2,519.98	-2,362.78	1,620,985.40	2,308,170.80	39.5127469	-107.9524336	
- plan misses target center by 42.88usft at 6738.81usft MD (5690.94 TVD, 2489.12 N, -2333.84 E)										
- Circle (radius 50.00)										
PA 322-24 PBHL	0.00	0.00	8,240.00	2,519.98	-2,362.78	1,620,985.40	2,308,170.80	39.5127469	-107.9524336	
- plan misses target center by 0.01usft at 9290.29usft MD (8240.00 TVD, 2519.98 N, -2362.78 E)										
- Point										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,100.00	1,029.07	9 5/8" Casing @ 1100' MD	9.62	13.50	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,656.09	2,275.00	GSAND		0.00	0.00	
2,743.52	2,345.00	GSAND Base		0.00	0.00	
4,621.93	3,849.00	Lower Wasatch		0.00	0.00	
5,489.94	4,545.00	OCRK		0.00	0.00	
5,489.94	4,545.00	MVRD		0.00	0.00	
5,489.94	4,545.00	WRFK/UMVRD		0.00	0.00	
6,731.76	5,684.00	KMVGAS		0.00	0.00	
8,793.29	7,743.00	CMEO		0.00	0.00	
9,140.29	8,090.00	RLNS		0.00	0.00	
9,290.29	8,240.00	TD		0.00	0.00	

Database:	Grand Junction District	Local Co-ordinate Reference:	Well PA 322-24 - Slot PA 322-24 (A7)
Company:	TEP Rocky Mountain LLC	TVD Reference:	GL 5371' & RKB 24' @ 5395.00usft
Project:	Garfield County, CO NAD83	MD Reference:	GL 5371' & RKB 24' @ 5395.00usft
Site:	PA 34-24 Pad	North Reference:	True
Well:	PA 322-24	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 9Aug2018 mmsdi		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
135.00	135.00	0.00	0.00	Start Build 4.00
1,055.13	993.14	208.28	-195.28	Start 4336.38 hold at 1055.13 MD
5,391.51	4,465.19	2,103.43	-1,972.21	Start Drop -2.00
6,731.76	5,684.00	2,488.23	-2,333.01	Start DLS 2.00 TFO 180.00
7,231.76	6,181.47	2,519.98	-2,362.78	Start 2058.53 hold at 7231.76 MD
9,290.29	8,240.00	2,519.98	-2,362.78	TD at 9290.29